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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/728,768	12/08/2003	Takahiro Kitano	245639US3 DIV	1087

22850 7590 08/10/2004

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EXAMINER	
KOCH, GEORGE R	

ART UNIT	PAPER NUMBER
1734	

DATE MAILED: 08/10/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	10/728,768	KITANO ET AL.
	Examiner	Art Unit
	George R. Koch III	1734

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 June 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *14-27* is/are pending in the application.

4a) Of the above claim(s) *24-27* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *14-16 and 20-23* is/are rejected.

7)☒ Claim(s) *17-19* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☒ Certified copies of the priority documents have been received in Application No. 09/734,877.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *12/08/2003*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election with traverse of group I, and species I, which comprise claims 14-23 in the response received 6/21/2004is acknowledged. The traversal is on the ground(s) that the groups are not patentably distinct. This is not found persuasive because the groups are patentably distinct. With regard to group I as a whole (claims 14-23) versus group II (claims 24-27), the restriction is by combination/subcombination, group I being the combination, group II being the subcombination. The combination does not require many of the details of the subcombination, especially the solvent atmosphere generating means, the intake means, and the sensor or controls means for detecting the solvent atmosphere. In fact, the combination is silent as to any control of the solvent atmosphere, being more concerned with the arrangement of the units themselves. The subcombination can be used on its own, such as a coating process unit that operates without the extra processing units claimed, or the transfer mechanisms claimed in the combination.

Furthermore, irrespective of the search burden, there is a massive prosecution burden involved in the prosecution of the two groups. Extensive and individuated analyses are required, and the two analyses would not be identical, due to the differences in the claims noted above.

The requirement is still deemed proper and is therefore made FINAL.

Double Patenting

2. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

3. Claims 14-16, and 22-23 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 3-6 of U.S. Patent No. 6,261,007 in view of US 5,937,223 (Hereafter referred to as Akimoto) and one of JP 2000-077326 (hereafter referred to as Kitano '326, submitted in IDS, paper #2) or JP 2000-188251 (hereafter referred to as Kitano '251, submitted in IDS, paper #2).

Claims 3-6 of US 6,261,007 disclose the coating unit with a coating process unit, a reduced pressure portion unit, a remover portion which removes resist, an outer conveyor, which is analogous to the main transfer mechanism, and a plurality of heating process portions, a species of the plurality of treatment units. Claim 4 of US 6,261,007 further recites atmospheric controllers.

Claims 1-6 of US 6,261,007 do not claim or disclose the cassette mounting section, or that the main transfer mechanism has a holding member or atmosphere

forming means. Claims 1-6 of US 6,261,007 does not claim that the coating unit has a coating solution nozzle, and a drive mechanism for moving the coating solution nozzle as claimed.

Akimoto discloses the cassette mounting section (item 10) and the plural treatment units (shown in Figures 2 and 3) along a coating unit as a unified system for processing semiconductor substrate. One in the art would appreciate that the modular units and overall structures of Akimoto improve the operating efficiency. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have utilized the cassette mounting section and plural treatment units in order to improve processing efficiency and yield.

Both Kitano '326 and Kitano '251 disclose that the coating section includes a substrate holding portion, a coating solution nozzle, and a drive mechanism as claimed.

Kitano '251 discloses a nozzle drive unit (paragraph 0016) that is part of the structure that allows for higher yield of resist or coating liquid usage. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have utilized the nozzle and associated structure, such as the drive mechanism of Kitano '251 in order to improve the yield of the liquid and reduce waste and cost.

Similarly, Kitano '326 discloses a nozzle drive unit (paragraphs 0057-0060) that is part of the structure that allows for higher yield of resist or coating liquid usage. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have utilized the nozzle and associated structure, such as the drive

mechanism of Kitano '326 in order to improve the yield of the liquid and reduce waste and cost.

As to claim 15, the claims of US 6,261,007 do not claim that the atmosphere forming means supply solvent vapor as the gas supply. However, the atmosphere forming means of Akimoto is capable of supplying solvent vapor as the gas supply. Such forming means improve the cleanliness of the processing system. Therefore, it would have been obvious to one of ordinary skill in the art to have utilize such atmosphere forming means.

As to claim 16, the claims of US 6,261,007 do not claim means for making an atmosphere at a predetermined temperature or predetermined humidity. Akimoto discloses that the atmosphere forming means includes means for making an atmosphere at a predetermined temperature, in the form of a temperature controller (item 82a, see column 11, lines 1-10). Akimoto also discloses means for making an atmosphere at a predetermined humidity (column 11, lines 8-10). Such forming means improve the cleanliness of the processing system. Therefore, it would have been obvious to one of ordinary skill in the art to have utilize such atmosphere forming means.

As to claim 22 and 23, the claims of US 6,261,007 does not claim that the nozzle is capable of line shaped dispensing, or that a mask is used.

Kitano '251 as incorporated discloses that the nozzle is capable of line shaped dispensing, and that a mask is used.

Kitano '251 as incorporated discloses a nozzle and associated structure that is capable of line shaped dispensing. Kitano '251 discloses that such a dispenser dramatically improves the yield of the liquid (see paragraph 0016). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have utilized the nozzle and associated structure of Kitano '251 in order to improve the yield of the liquid and reduce waste and cost.

Kitano '251 further discloses that the mask (item 4, see translated paragraphs 0030). One would immediately appreciate that the mask prevents accidental deposition of the coating liquid outside the target region. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have utilized a mask as in Kitano '251 in order to prevent accidental deposition of the resist material outside of the target region.

Similarly, Kitano '326 discloses that the nozzle is capable of line shaped dispensing, and that a mask is used.

Kitano '326 discloses a nozzle and associated structure that is capable of line shaped dispensing (see Figure 9 and 11). Kitano '326 discloses that such a dispenser dramatically improves the yield of the liquid (see paragraph 0014). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have utilized the nozzle and associated structure of Kitano '326 in order to improve the yield of the liquid and reduce waste and cost.

Kitano '326 discloses that the mask (item 4, see translated paragraphs 0033). One would immediately appreciate that the mask prevents accidental deposition of the

coating liquid outside the target region. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have utilized a mask as in Kitano '326 in order to prevent accidental deposition of the resist material outside of the target region.

4. Claim 20 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 3-6 of U.S. Patent No. 6,261,007 in view of Akimoto, Sago, and one of JP 2000-077326 (hereafter referred to as Kitano '326) or JP 2000-188251 (hereafter referred to as Kitano '251) as applied to claims 14 above, and further in view of JP 09-320915 (hereafter referred to as Yamaguchi).

The claims of US 6,261,007, Akimoto, Kitano '326 and Kitano '251 are silent as to the presence of a cover body for surrounding a circumference of the substrate held by the holding member.

Yamaguchi discloses a cover body (Figure 7, item 94) for surrounding a circumference of the substrate held by the holding member (item 96). Yamaguchi discloses that it is known in photoresist coating applications (such as those of Akimoto, Sago, Kitano '326 and Kitano '251) for the movement of the conveyance mechanism to spread particles (see paragraph 0013 of translation of detailed description). Yamaguchi discloses that a base material (i.e., the cover 94) can prevent particles moved from going into processing units, which ensures fresh air (i.e., clean air) only is distributed to the processing units. Therefore, it would have been obvious to one of ordinary skill in

the art at the time of the invention to have utilized such a cover body in order to ensure a clean processing chamber.

5. Claim 21 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 3-6 of U.S. Patent No. 6,261,007 in view of Akimoto, Sago, and one of JP 2000-077326 (hereafter referred to as Kitano '326) or JP 2000-188251 (hereafter referred to as Kitano '251) as applied to claims 14 above, and further in view of US Patent 6,159,541 (hereafter referred to as Sakai) and US Patent 5,993,547 (hereafter referred to as Sato).

As to claim 21, the claims of US 6,261,007, Akimoto, and either of Kitano '326 or Kitano '251 do not disclose a coating unit with a coating film removing section.

Sakai discloses a coating unit with a coating film removing section and a coating section. Sato discloses an isolated coating film removing section and further discloses that this section is a peripheral portion resist removing section which prevents the scattered and bounded resist material and resist exfoliating agent from adhering to the resist pattern formation zone of the substrate, thus preventing defective wafer patterning (column 2, lines 31-38). Therefore, it would have been obvious to one in the art at the time of the invention to have utilized a coating unit with a coating film removing section as suggested by Sakai as the third washing section of Kimura and Sago since such a section would prevent defective wafer patterning as disclosed by Sato.

Information Disclosure Statement

6. The information disclosure statement (IDS) submitted on 5/5/2004 listing related cased (US Serial Number 10/771,637) was considered. A notation indicating that the examiner has reviewed the related case has been made in the search notes.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

10. Claims 14-16 and 22-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 5,937,223 (hereafter referred to as Akimoto) in view of JP 9-164364 (hereafter referred to as Sago), and one of JP 2000-077326 (hereafter referred to as Kitano '326, submitted in IDS, paper #2) or JP 2000-188251 (hereafter referred to as Kitano '251, submitted in IDS, paper #2)

As to claim 14, Akimoto discloses the cassette mounting section (section 10), the coating unit (items COT), the plural treatment units (for example, Figures 2 and 3), and the main transfer mechanism (21a and 21b) with a holding member (item 9) for holding the substrate. Akimoto also discloses coating unit (Figure 13) has a coating nozzle (item 189) and substrate holding portion (item 171). Akimoto also discloses that the main transfer unit includes a holding member (called an arm - see column 12, lines 48-55, for example), and an atmosphere forming means (described in columns 9-11, includes structures 20b, 74, 28b, 70, and 71b). These structure are capable of making an atmosphere in which he vaporization of solvent is inhibited, based on the settings (temperature, pressure, gas supply, etc) selected.

However, Akimoto does not disclose a reduced pressure drying section unit as one of the plurality of treatment units.

Akimoto does not disclose a drive mechanism for moving the coating solution nozzle.

Sago discloses a reduced pressure drying unit (item 3). One in the art would appreciate that the reduced pressure section allows for drying without heat, which is known to trigger undesirable chemical reactions in the production process. Using reduced pressure allows for drying by evaporation, and avoids these heat triggered chemical reactions, thus improving efficiency. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have utilized a coating unit with both a coating section and a reduced pressure drying section as in Sago in order to improved production efficiencies and reduce losses due to improper chemical reactions due to heat.

Both Kitano '326 and Kitano '251 disclose that the coating section includes a substrate holding portion, a coating solution nozzle, and a drive mechanism as claimed.

Kitano '251 discloses a nozzle drive unit (paragraph 0016) that is part of the structure that allows for higher yield of resist or coating liquid usage. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have utilized the nozzle and associated structure, such as the drive mechanism of Kitano '251 in order to improve the yield of the liquid and reduce waste and cost.

Similarly, Kitano '326 discloses a nozzle drive unit (paragraphs 0057-0060) that is part of the structure that allows for higher yield of resist or coating liquid usage. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have utilized the nozzle and associated structure, such as the drive mechanism of Kitano '326 in order to improve the yield of the liquid and reduce waste and cost.

As to claim 15, the atmosphere forming means of Akimoto is capable of supplying solvent vapor as the gas supply.

As to claim 16, Akimoto discloses that the atmosphere forming means includes means for making an atmosphere at a predetermined temperature, in the form of a temperature controller (item 82a, see column 11, lines 1-10). Akimoto also discloses means for making an atmosphere at a predetermined humidity (column 11, lines 8-10).

As to claim 22 and 23, Akimoto does not disclose that the nozzle is capable of line shaped dispensing, or that a mask is used.

Kitano '251 as incorporated discloses that the nozzle is capable of line shaped dispensing, and that a mask is used.

Kitano '251 as incorporated discloses a nozzle and associated structure that is capable of line shaped dispensing. Kitano '251 discloses that such a dispenser dramatically improves the yield of the liquid (see paragraph 0016). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have utilized the nozzle and associated structure of Kitano '251 in order to improve the yield of the liquid and reduce waste and cost.

Kitano '251 further discloses that the mask (item 4, see translated paragraphs 0030). One would immediately appreciate that the mask prevents accidental deposition of the coating liquid outside the target region. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have utilized a mask as in Kitano '251 in order to prevent accidental deposition of the resist material outside of the target region.

Similarly, Kitano '326 discloses that the nozzle is capable of line shaped dispensing, and that a mask is used.

Kitano '326 discloses a nozzle and associated structure that is capable of line shaped dispensing (see Figure 9 and 11). Kitano '326 discloses that such a dispenser dramatically improves the yield of the liquid (see paragraph 0014). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have utilized the nozzle and associated structure of Kitano '326 in order to improve the yield of the liquid and reduce waste and cost.

Kitano '326 discloses that the mask (item 4, see translated paragraphs 0033). One would immediately appreciate that the mask prevents accidental deposition of the coating liquid outside the target region. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have utilized a mask as in Kitano '326 in order to prevent accidental deposition of the resist material outside of the target region.

11. Claims 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Akimoto, Sago, and one of JP 2000-077326 (hereafter referred to as Kitano '326) or JP 2000-188251 (hereafter referred to as Kitano '251) as applied to claims 14 above, and further in view of JP 09-320915 (hereafter referred to as Yamaguchi).

Akimoto, Sago, Kitano '326 and Kitano '251 are silent as to the presence of a cover body for surrounding a circumference of the substrate held by the holding member.

Yamaguchi discloses a cover body (Figure 7, item 94) for surrounding a circumference of the substrate held by the holding member (item 96). Yamaguchi discloses that it is known in photoresist coating applications (such as those of Akimoto, Sago, Kitano '326 and Kitano '251) for the movement of the conveyance mechanism to spread particles (see paragraph 0013 of translation of detailed description). Yamaguchi discloses that a base material (i.e., the cover 94) can prevent particles moved from going into processing units, which ensures fresh air (i.e., clean air) only is distributed to the processing units. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have utilized such a cover body in order to ensure a clean processing chamber.

12. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Akimoto, Sago, and one of JP 2000-077326 (hereafter referred to as Kitano '326) or JP 2000-188251 (hereafter referred to as Kitano '251) as applied to claims 14 above, and further in view of US Patent 6,159,541 (hereafter referred to as Sakai) and US Patent 5,993,547 (hereafter referred to as Sato).

As to claim 21, Akimoto, Sago and either of Kitano '326 or Kitano '251 do not disclose a coating unit with a coating film removing section.

Sakai discloses a coating unit with a coating film removing section and a coating section. Sato discloses an isolated coating film removing section and further discloses that this section is a peripheral portion resist removing section which prevents the scattered and bounded resist material and resist exfoliating agent from adhering to the

resist pattern formation zone of the substrate, thus preventing defective wafer patterning (column 2, lines 31-38). Therefore, it would have been obvious to one in the art at the time of the invention to have utilized a coating unit with a coating film removing section as suggested by Sakai as the third washing section of Kimura and Sago since such a section would prevent defective wafer patterning as disclosed by Sato.

Allowable Subject Matter

13. Claims 17-19 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

14. The following is a statement of reasons for the indication of allowable subject matter: With regard to claims 17-18, the prior art of record does not teach that the main transfer mechanism has washing means for washing the holding member.

15. With regard to claim 19, the prior art of record does not disclose that the main transfer mechanism has detecting means for detecting a stain of the holding member.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to George R. Koch III whose telephone number is (571) 272-1230 (TDD only). If the applicant cannot make a direct TDD-to-TDD call, the applicant can communicate by calling the Federal Relay Service at 1-800-877-8339 and

giving the operator the above TDD number. The examiner can normally be reached on M-Th 10-7.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christopher Fiorilla can be reached on (571) 272-1187. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

George R. Koch III
Patent Examiner
Art Unit 1734

GRK
August 3, 2004